BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Chairman, Subcommittee On Environment, Energy, And Natural Resources, Committee On Government Operations House Of Representatives

Financial Status Of The Great Plains Coal Gasification Project

Great Plains Gasification Associates and the Department of Energy (DOE) signed a loan guarantee agreement in January 1982 for up to $2.02 billion of the estimated $2.76 billion needed to construct a plant producing synthetic gas from coal. Faced with deteriorating financial projections in the wake of declining energy prices, Great Plains applied to the U.S. Synthetic Fuels Corporation (SFC) for additional project assistance. In April 1984 SFC tentatively agreed to provide Great Plains up to $790 million in price guarantee assistance. In return, the Great Plains partners would contribute more equity and Great Plains would repay the DOE-guaranteed loan faster and share profits with SFC.

According to GAO's assessment of SFC's proposed assistance, a lower amount of assistance could achieve the same results if Great Plains' partners could fully use certain tax credits and if energy prices and other assumptions remained the same as those SFC used in April 1984. Since April 1984, however, several changes have occurred, such as a continued decline in energy prices. An August 1984 SFC analysis indicates that the decline in energy prices offset the effect of the increased tax credits. Other changes have also occurred, but SFC analyses subsequent to August 1984 showing the impact of these changes were not available to GAO. If all changes since April 1984 were incorporated into GAO's analyses, the results could be different.

COMPLETED

GAO/RCED-85-70
FEBRUARY 21, 1985

Request for copies of GAO reports should be sent to:

U.S. General Accounting Office
Document Handling and Information
Services Facility
P.O. Box 6015
Gaithersburg, Md. 20760

Telephone (202) 275-6241

The first five copies of individual reports are free of charge. Additional copies of bound audit reports are $3.25 each. Additional copies of unbound report (i.e., letter reports) and most other publications are $1.00 each. There will be a 25% discount on all orders for 100 or more copies mailed to a single address. Sales orders must be prepaid on a cash, check, or money order basis. Check should be made out to the "Superintendent of Documents".

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

RESOURCES, COMMUNITY,
AND ECONOMIC DEVELOPMENT
DIVISION

B-207876

The Honorable Mike Synar, Chairman
Subcommittee on Environment, Energy,
and Natural Resources
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

On August 10, 1984, you asked us to review certain aspects of the financial viability of the Great Plains coal gasification project. Specifically, you were interested in the financial status of the project as shown in Great Plains' May 1984 cash-flow projection to the Department of Energy and the effect of proposed assistance from the U.S. Synthetic Fuels Corporation on the project's finances.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of its issuance. At that time, we will send copies to the Secretary of Energy, the Chairman of the U.S. Synthetic Fuels Corporation, and the Great Plains Management Committee. We will also make copies available to others upon request.

Sincerely yours,

J. Dexter Peach
Director

GENERAL ACCOUNTING OFFICE REPORT
TO THE CHAIRMAN, SUBCOMMITTEE ON
ENVIRONMENT, ENERGY, AND NATURAL
RESOURCES, COMMITTEE ON GOVERNMENT
OPERATIONS
HOUSE OF REPRESENTATIVES

FINANCIAL STATUS OF THE GREAT PLAINS COAL GASIFICATION PROJECT

D I G E S T

In January 1982 the Department of Energy (DOE) awarded a loan guarantee for up to $2.02 billion to Great Plains Gasification Associates to build a plant producing synthetic natural gas from coal. The Department of the Treasury's Federal Financing Bank is lending 75 percent, or up to $2.02 billion, of the money to construct the project. Great Plains is financing the rest of the originally estimated $2.76 billion cost with its own equity. As of December 1984, Great Plains had borrowed about $1.3 billion and had contributed about $480 million in equity. Because construction costs are less than originally anticipated, Great Plains estimates it will ultimately borrow about $1.5 billion and contribute about $565 million in equity under the loan guarantee agreement. The plant began operating in July 1984 and had operated at about 67 percent of production capacity in December 1984. (See pp. 1 and 2.)

At the time the loan guarantee agreement was signed in January 1982, Great Plains estimated that the project would be in a positive cash-flow position after 3 years of operations and would remain so through 1996, when Great Plains projected it would have fully repaid the DOE-guaranteed loan. By March 1983 Great Plains projected a less favorable financial outlook primarily because of decreasing energy prices. As a result, Great Plains in September 1983 requested price guarantee assistance from the U.S. Synthetic Fuels Corporation (SFC). In November 1983 the partners notified DOE that they were considering terminating their participation in the project unless they received additional assistance.

In April 1984 Great Plains and SFC signed a letter of intent for up to $790 million in price guarantee assistance for a maximum of 10 years (a final contract is expected in the spring of 1985). The letter of intent also guaranteed to pay the difference between gas

prices--$10 per million Btu's[1] for the first 3 years of the price guarantee period and $7.50 per million Btu's thereafter--and the market price, if the market price is less than the guaranteed price. The amount paid could not exceed $790 million. In exchange for this assistance:

--The Great Plains partners would, during the first 3 years of the price guarantee period, contribute an additional $100 million in equity and all positive cumulative after-tax cash flow for Great Plains to use in accelerating repayment of the DOE-guaranteed loan.

--After 3 years, Great Plains would use 90 percent of project-related positive cumulative after-tax cash flow to accelerate repayment of the loan balance.

--Great Plains would pay SFC--after the loan is repaid--70 percent of the positive cumulative after-tax cash flow not to exceed $1.58 billion (March 1984 dollars). (See pp. 4 and 5.)

In May 1984 Great Plains submitted a revised analysis of the project's financial outlook to DOE (called a cash-flow projection) that included the effects of the provisions of the letter of intent. (See p. 5.)

In August 1984 the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, requested that GAO review Great Plains' May 1984 cash-flow projection and determine the effect of SFC's proposed price guarantee assistance on the project's financial viability. Subsequently, the Chairman's office also requested information on returns on equity for comparable industries, rates of return used in SFC's analysis, and DOE's analysis of the options available to it if Great Plains were to abandon the project. These subsequent topics are discussed on pages 28 to 31 of this report. (See p. 5.)

Most of the information needed to answer these questions was generated by computerized financial models used by Great Plains, SFC, and

[1]A Btu (British thermal unit) is the quantity of energy required to raise the temperature of 1 pound of water 1 degree Fahrenheit at a specified pressure.

DOE. GAO reviewed the assumptions in various input values and selected components of these models but did not validate any of them. GAO found no problems with the models within the limits of its review but did find differences in the assumptions used. (See pp. 5 and 6.)

GAO analyzed the effects of SFC's price guarantee assistance, lower amounts of assistance, lower guaranteed gas prices, and increased production tax credits.[2] For consistency, GAO used SFC's April 1984 analysis (median-case scenario) in conducting these analyses. GAO also obtained SFC's August 1984 analyses to determine the sensitivity of Great Plains' finances to downward revisions of energy prices and increased production tax credits. Analyses subsequent to August 1984 showing the other changes as noted below were not available to GAO. While GAO's analyses were valid when they were conducted, GAO recognizes that, because of ever-changing conditions, these analyses could be different if conducted in February 1985. Thus, where appropriate, GAO reports the sensitivity of the results to changes in key assumptions.

Since April 1984 several events could potentially effect the analyses presented in this report. First, Great Plains and SFC are negotiating a final agreement that could change some conditions set forth in the letter of intent. Second, SFC has revised its energy price forecast downward.[3] Third, Great Plains began plant operations in July 1984 and subsequently decreased its estimated sales and increased its operating cost estimates. Finally, Great Plains received a ruling from the Internal Revenue Service in July 1984 that the partners are eligible for 100 percent of production tax credits: previously the sponsors did not believe they were eligible for these credits. (See p. 18.)

---

[2]The Crude Oil Windfall Profits Tax Act of 1980 (Public Law 96-223) authorizes production tax credits; they apply to qualified fuels sold between January 1, 1980, and December 31, 2000. The amount of the credits is deducted from taxes owed.

[3]GAO previously reported in Economics of the Great Plains Coal Gasification Project (GAO/RCED-83-210, Aug. 24, 1983) that the finances of this project are extremely sensitive to energy price changes.

GREAT PLAINS' MAY 1984 CASH-FLOW PROJECTION SHOWS CHANGES IN PROJECT'S FINANCIAL OUTLOOK

Each cash-flow projection since January 1982 reflected a deterioration in the project's anticipated financial viability. The May 1984 cash-flow projection showed that, even with SFC assistance, accelerated repayment of the DOE-guaranteed loan, and 100-percent production tax credits, the project would still not be as financially viable as anticipated in January 1982. For example, the May 1984 projection showed that the project would lose $240 million through 1996 rather than realize net income of $2.2 billion, as projected in January 1982. (See pp. 14 to 17.)

IMPACT OF SFC'S PROPOSED ASSISTANCE ON GREAT PLAINS

According to SFC's April 1984 analysis that was used to evaluate Great Plains' financial outlook and to negotiate the letter of intent, Great Plains would receive the financial benefits of $790 million in assistance but over the life of the project would realize a lower internal rate of return[4] with assistance (14 percent) than without it (19 percent).[5] According to SFC, the factors that contribute to the lower internal rate of return are the additional equity the partners would contribute, the accelerated debt repayment, and the sharing of profits. (See pp. 22 and 23.)

The Great Plains partners are willing to accept a lower rate of return because SFC's assistance provides additional income during the first 10 years of operations (1985-1994) and helps alleviate the impact of losses. Although the project offers potential long-term profitability, the partners are more concerned that even lower energy prices during the first 10 years would not only result in large after-tax losses but would also diminish their consolidated earnings, weaken their credit rating, increase their cost of capital, and

---

[4]An internal rate of return is the interest rate that equates the present value of future cash flows, or receipts, to the initial capital investment.

[5]Both analyses are based on SFC's April 1984 median case scenario and assume 77 percent production tax credits.

drain capital from their other businesses. (See pp. 20 and 23.)

From SFC's perspective, the expected impacts of the proposed assistance (based on its April 1984 analysis) offer several positive outcomes: (1) the DOE-guaranteed loan would be fully repaid 10 years earlier (in 1994 rather than 2004), (2) Great Plains would pay SFC $3.4 billion from profits between 1995 and 2009, and (3) the likelihood of project abandonment could be reduced. (See pp. 18 and 19.)

Impact of changing tax benefits on assistance proposed

The Energy Security Act requires SFC to consider tax credits in determining the appropriate amount of assistance. SFC negotiated the letter of intent assuming that the partners would be eligible for 77 percent of production tax credits. However, in July 1984, the Internal Revenue Service notified Great Plains that the partners are eligible for 100 percent of these credits. (See p. 23.)

GAO analyzed the impacts of lower amounts of assistance, such as $500 million, $650 million, and $770 million and lower guaranteed gas prices assuming that the partners would use 100 percent of the production tax credits available to them. Under each analysis, GAO found that the higher production tax credits more than offset the reductions in assistance levels and yielded results at least as favorable as those resulting from SFC's April 1984 negotiations. (See pp. 23 to 26.)

For example, GAO found that $500 million in assistance, together with 100-percent production tax credits, provided Great Plains a 15-percent internal rate of return, compared to 14 percent under the terms of the letter of intent with 77-percent production tax credits. Further, full repayment of the DOE-guaranteed loan was accelerated by one year (1993). (See pp. 23 and 24.)

GAO notes that these analyses are only illustrative and the outcomes could change as conditions on which key assumptions are based change. For example, in August 1984 SFC revised its median-case energy price forecast downward. SFC's analysis indicates that the decline in energy prices was offset by the increase in production tax credits.

Offset of government investment through profit sharing

After the DOE-guaranteed debt is repaid, Great Plains would pay SFC 70 percent of project-related positive cumulative after-tax cash flow. However, the Energy Security Act does not require profit sharing as a prerequisite to a project's receiving price guarantee assistance. (See p. 26.)

According to SFC's analysis, the gross profit sharing receipts would be $3.4 billion in current dollars. However, money received today is worth more than money received in the future. As a result, when the near-term cost of the $790 million in price guarantee payments is discounted and compared with the discounted $3.4 billion future profit sharing receipts, the government would receive $87 million less than it paid out under the terms of SFC's letter of intent. GAO's computations do not consider that the parent companies of the Great Plains partners pay taxes on the price guarantees received by the project nor that profit sharing payments made to SFC are deductible from the parent companies' taxable income. (See p. 26.)

- - - -

GAO did not obtain written comments from DOE, SFC, or Great Plains on this report. GAO did, however, discuss the material presented with DOE's Great Plains Project and Program Offices; numerous SFC officials, including its acting Vice President for Finance and Project Officer for Great Plains; and the Great Plains Management Committee Chairman. All offered clarifications to the report, which were incorporated where appropriate.

Contents

		Page
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	Description of the project	1
	Project oversight	3
	Cash-flow projections show decline in project's financial outlook	3
	Objectives, scope, and methodology	5
2	CASH-FLOW PROJECTIONS SHOW DETERIORATION OF GREAT PLAINS' FINANCIAL OUTLOOK	10
	March 1983 cash-flow projection	11
	September 1983 mid-case cash-flow projection	13
	May 1984 cash-flow projection	14
	Observations	17
3	IMPACT OF SFC'S PROPOSED ASSISTANCE ON GREAT PLAINS' FINANCES	18
	Great Plains' requests for SFC assistance	20
	Great Plains' internal rate of return with and without assistance	22
	Impact of changing tax benefits on proposed assistance	23
	Most price guarantee payments returned through profit sharing	26
	Energy prices affect Great Plains' financial viability	26
	Other issues	28
	Observations	31

ILLUSTRATIONS

	Page
Great Plains Gasification Associates' partners	2
Results of Great Plains' cash-flow projections	11
Comparison of synthetic gas prices--March and September 1983 cash-flow projections	13
Financial impacts of less price guarantee assistance	24
Financial impacts of lower guaranteed gas prices	25

Financial impacts of SFC's August 1984 energy price scenario 27

Great Plains' cumulative after-tax cash flow 28

Returns on equity for other industries 29

Government cash flows under abandonment 31

ABBREVIATIONS

ANG	ANG Coal Gasification Company
Btu	British thermal unit
DOE	Department of Energy
DPV	discounted present value
GAO	General Accounting Office
GOCO	government owned/contractor operated
NEPP	National Energy Policy Plan
SFC	U.S. Synthetic Fuels Corporation

CHAPTER 1

INTRODUCTION

The Department of Energy Act of 1978--Civilian Applications (Public Law 95-238) authorizes the Department of Energy (DOE) to provide loan guarantees for alternative fuel demonstration projects. The Secretary of Energy awarded a loan guarantee to Great Plains Gasification Associates on January 29, 1982, for up to $2.02 billion of the estimated $2.75 billion cost to build a plant producing synthetic natural gas from coal.

The federal government, through the Department of the Treasury's Federal Financing Bank, is lending Great Plains part of the money for the project, with Great Plains financing the rest with its own equity. The financial terms and conditions of the loan guarantee allow the Federal Financing Bank to lend up to 75 percent of project costs not to exceed $2.02 billion. The amount of borrowing and equity contributions depend on actual project costs. As of December 1984, Great Plains had borrowed about $1.3 billion from the Federal Financing Bank and had contributed about $480 million in equity[1] to the project. As of January 1985, Great Plains estimated it will ultimately borrow about $1.5 billion and the partners would contribute about $565 million in equity under the loan guarantee agreement.

Under the terms of the loan guarantee agreement, Great Plains can borrow funds for construction and startup activities related to the project for up to 1 year after the in-service date--originally estimated to be December 1, 1984. On November 9, 1984, Great Plains notified DOE that it had revised the estimated in-service date to June 1, 1985. DOE and Great Plains then began to negotiate the definition of in-service date. On January 29, 1985, they agreed that the in-service date would be defined as the time after which the plant has operated for 90 days (excluding scheduled maintenance and systems modification days) at an average of 70 percent of production capacity and after each train of the plant (the plant has two trains with seven gasifiers each) has produced an average of 68.75 million cubic feet per day of gas (100 percent of production capacity) for three consecutive days beginning with December 1, 1984. DOE expects the in-service date could occur by May 1, 1985. The letter of intent between Great Plains and the U.S. Synthetic Fuels Corporation (see p. 4) requires Great Plains to stop borrowing funds under the loan guarantee agreement prior to receiving SFC price guarantee assistance.

DESCRIPTION OF THE PROJECT

The Great Plains coal gasification plant will be the nation's first commercial-scale plant producing synthetic natural gas from coal. The facility, located in Mercer County, North Dakota, consists of three components: a gasification plant, a lignite coal

[1]Great Plains claims $524 million in equity. This includes about $44 million that DOE, prior to signing the loan guarantee agreement, determined was not eligible as equity for the project.

surface mine, and a pipeline connecting the plant to an interstate network of natural gas pipelines. Construction of the plant began in August 1981. Initial gas production began in July 1984. In December 1984, the plant operated at about 67 percent of capacity. When in full operation, the plant is expected to use about 14,000 tons of lignite coal daily to produce 125 million cubic feet of synthetic gas (the equivalent of 22,000 barrels of oil), 93 tons of ammonia, 85 tons of sulfur, and 200 million cubic feet of carbon dioxide.

Great Plains Gasification Associates--a partnership of five companies--owns the project. The partners and their percentage of equity are as follows:

	Percentage of equity
Tenneco SNG Inc. (an indirect subsidiary of Tenneco Inc.)	30
ANR Gasification Properties Company (a subsidiary of American Natural Resources Company)	25
Transco Coal Gas Company (a subsidiary of Transco Energy Company)	20
MCN Coal Gasification Company (a subsidiary of MidCon Corporation, formerly Peoples Energy Corporation)	15
Pacific Synthetic Fuel Company (a subsidiary of Pacific Lighting Corporation)	10
Total	100

Four pipeline companies, which are subsidiaries of four parent companies of the Great Plains partners, have agreed to purchase all the gas produced by the plant.[2] The production of the plant represents about 1 percent of the pipeline companies' average annual gas requirements. The price of the gas is not fixed but will be controlled by gas purchase contracts that contain a pricing formula. The pricing formula provides that the gas will be sold to the pipeline companies at a base price of $6.75 per million Btu's[3] in January 1, 1981, dollars. The $6.75 price

[2]Pacific Synthetic Fuel Company will not purchase any gas.

[3]A Btu (British thermal unit) is the quantity of energy required to raise the temperature of 1 pound of water 1 degree Fahrenheit at a specified pressure.

varies quarterly based on changes in the Producers' Price Index and changes in the price of No. 2 fuel oil. Great Plains agreed to the $6.75 per million Btu's as a benchmark since it was comparable to the 1980 prices paid by interstate pipelines for unregulated natural gas.

However, the pricing formula sets various "caps" on the prices. Specifically:

--For 5 years after the initial delivery of gas, the price cannot exceed the price of unregulated No. 2 fuel oil.

--From the sixth through tenth year, the price will be the greater of the average prices paid by the pipeline affiliates for the highest 10 percent of domestic natural gas or for Canadian and Mexican gas. In neither case can it be higher than the unregulated price of No. 2 fuel oil.

--After 10 years, the price will be based on the price of unregulated domestic natural gas prices. If gas prices are regulated at that time, then the price paid for Canadian and Mexican gas will set the ceiling.

Great Plains began producing gas in July 1984. Between July and December 1984, the formula price ($6.75 per million Btu's adjusted) ranged from $6.98 to $7.28 per million Btu's. However, Great Plains' synthetic gas sales price ranged from $5.69 to $6.10 per million Btu's--the price of No. 2 fuel oil, which controls the sales price during the first 5 years of gas production. As of December 1984, Great Plains had sold about 7.4 billion cubic feet of gas, totaling about $41.5 million.

PROJECT OVERSIGHT

Great Plains appointed ANG Coal Gasification Company (ANG) as project administrator. ANG is responsible for the day-to-day planning, engineering, design, construction, and operation of the gasification plant, pipeline, and coal mine. Great Plains provides overall direction to ANG through a management committee composed of representatives from each of the partners.

At the federal level, DOE's Office of Oil, Gas, Shale, and Coal Liquids, Office of the Assistant Secretary for Fossil Energy, monitors the construction and operation of the project to ensure timely project completion and the appropriate use of guaranteed debt. DOE headquarters delegated responsibility to DOE's Chicago Operations Office for the day-to-day monitoring of the project. That responsibility includes determining that a reasonable assurance of debt repayment exists.

CASH-FLOW PROJECTIONS SHOW DECLINE IN PROJECT'S FINANCIAL OUTLOOK

DOE requires Great Plains to submit annually a cash-flow projection demonstrating both its ability to repay the loan DOE

guaranteed and the project's profitability. On March 31, 1983, Great Plains submitted to DOE the first cash-flow projection since the loan guarantee agreement had been signed. This projection showed that the project's financial outlook was less favorable than had been projected in January 1982 when the loan guarantee agreement was signed. Great Plains prepared another cash-flow projection in September 1983 that showed further financial deterioration. The changes in both the March and September 1983 projections were primarily due to decreasing energy prices. Great Plains applied to the U.S. Synthetic Fuels Corporation (SFC) in September 1983 for additional financial assistance--in the form of price guarantees.[4]

Great Plains and SFC reached preliminary agreement on the terms of financial assistance and signed a letter of intent[5] on April 26, 1984, for up to $790 million in assistance. The letter of intent also guarantees Great Plains gas prices of $10 per million Btu's for the first 3 years of the price guarantee period and $7.50 per million Btu's thereafter.[6] In exchange for this assistance:

--The Great Plains partners would, during the first 3 years of the price guarantee period, contribute $100 million in equity[7] and all project-related positive cumulative after-tax cash flow[8] (including that generated by price guarantee receipts) for Great Plains' use in accelerating repayment of the DOE-guaranteed loan.

---

[4]The government agrees to pay the difference between a guaranteed price and the market price of the project's product if the market price is below the guaranteed price. For example, if the market price is $6 per million Btu's and the guaranteed price is $10 per million Btu's, the government would pay $4 per million Btu's.

[5]A nonbinding statement documenting the financial terms negotiated by SFC staff and Great Plains management. The letter also discusses the various conditions that Great Plains must meet before SFC's board of directors will consider approving financial assistance. As of February 15, 1985, SFC's board of directors had not approved the assistance contract.

[6]SFC adjusts the $10 and $7.50 per million Btu's monthly for inflation, but not the $790 million.

[7]This is in addition to the equity Great Plains agreed to contribute under DOE's loan guarantee agreement. As of December 1984, Great Plains had contributed about $480 million in equity to the project.

[8]Cash generated by the project plus tax benefits available to the parent companies of the Great Plains partners. Prepayment of the debt and profit sharing payments are made only when Great Plains' cumulative after-tax cash flow is positive and increasing. A payment of either is based on any increase that occurs in the after-tax cash flow since the last time a payment was made--called the positive cumulative after-tax cash flow.

--Great Plains would use 90 percent of project-related positive cumulative after-tax cash flow after 3 years to accelerate repayment of the remaining loan.

--Great Plains would pay SFC--after the loan is repaid--70 percent of positive cumulative after-tax flow to a maximum of $1.58 billion (March 1984 dollars).

In May 1984 Great Plains submitted another cash-flow projection to DOE that analyzed the project's financial viability using the provisions of DOE's loan guarantee agreement and SFC's letter of intent. Although the May 1984 projection continued to show a decline in the project's financial outlook from the projection prepared in January 1982, the decline was not as large as those previously projected in March and September 1983 mainly because it included SFC's proposed $790 million in price guarantee assistance.

OBJECTIVES, SCOPE, AND METHODOLOGY

On August 10, 1984, the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, asked us to (1) analyze Great Plains' May 1984 cash-flow projection and (2) determine the effect of the SFC's proposed assistance on the project's financial viability particularly the expected rate of return and cumulative after-tax cash flow. Although the Chairman also asked what effect SFC's proposed assistance would have upon securing private sector commitments to continued operations over the life of the project, his office agreed that this issue need not be addressed. Subsequently, the Chairman's office also requested information on returns on equity for industries comparable to Great Plains, internal rates of return used in SFC's analyses, and DOE's analysis concerning options available to it in the event Great Plains abandoned the project in December 1984 or December 1989. To obtain the information needed, we interviewed DOE, SFC, and ANG officials and obtained documentation supporting the verbal information provided.

The information in Great Plains' May 1984 cash-flow projection (discussed in chapter 2), the information needed to determine the effect of SFC's assistance on Great Plains finances (discussed in chapter 3), and the data DOE used to identify options in the event Great Plains abandons the project (discussed in chapter 3) resulted from computerized financial models. In order to respond within the time constraints of the request, we did not attempt to validate any of the models. Rather we reviewed (1) the assumptions implicit in various input data values, such as inflation rates, plant operating efficiencies, and energy prices, and (2) selected components of DOE's, SFC's, and Great Plains' computer models, by flow-charting model logic and tracing specific model calculations. We selected those components that related to gas prices, taxes, revenues, operating and maintenance costs, price guarantee amounts, pay back of the DOE-guaranteed loan, and profit sharing with SFC. We selected these components because, in

combination, they have the most significant impact on Great Plains' financial outlook. Our review for each of the computer models determined the following:

--Within the limits of our review, there were no major problems (this statement does not attest to the validity of the models).

--The assumptions differ among the three models. For example, DOE and Great Plains assumed different operating efficiencies than SFC, all three used different energy prices, and DOE and Great Plains assumed different inflation and interest rates than SFC.

--DOE's model has the flexibility to calculate an internal rate of return[9] for any base year. SFC's model generates two different internal rates of return--an "incremental" and an "all-in" return. The incremental return does not include sunk costs (mostly construction costs incurred in the past that cannot be recouped) whereas the all-in return includes sunk costs.

--DOE's model is designed solely for Great Plains.

--SFC's model is generic, is used for evaluating all projects, and has only limited portions specifically applicable to Great Plains.

Since there are differences in the assumptions used in each of the models, the results generated differ. Therefore, the data presented in chapter 2, based on Great Plains' May 1984 economic assumptions, and the data presented in chapter 3, based on SFC's and DOE's assumptions, differ.

Concerning Great Plains' cash-flow projection, we compared the assumptions for future energy prices, inflation rates, and interest rates to those prepared by DOE, SFC, and Data Resources, Inc. (a recognized econometric firm). In addition, Great Plains' cash-flow projection assessed the impact of no production tax

[9]Internal rate of return is the interest rate that equates the present value of future cash flows, or receipts, to the initial capital investment.

credits and 100-percent production tax credits.[10] We do not know whether the Great Plains partners could fully utilize 100 percent of the production tax credits potentially available to them. Since Great Plains provided only the two analyses--0 and 100 percent production tax credits--and since it is likely that the partners could qualify for some percentage of these credits, we limited our analysis to the 100-percent production tax credit case. In addition, we compared the May 1984 cash-flow projection to Great Plains' January 1982 cash-flow projection. The January 1982 projection covered the period 1981 through 1996--the date Great Plains had originally expected to fully repay the DOE-guaranteed debt. The May 1984 projection covered the period 1981 through 2009--the last year of the expected 25-year plant operating life. We also compared the results of the May 1984 projection to those prepared since January 1982.

To determine the effect of SFC's proposed assistance on the project's financial viability (discussed in chapter 3), we used SFC's April 26, 1984, analysis that was prepared to support negotiations leading to the letter of intent (SFC refers to this as its median-case scenario). We did so because SFC determines whether the award of assistance is warranted and, if so, how much. This analysis reflects the terms of DOE's loan guarantee agreement, the letter of intent, and 77-percent production tax credits. However, because the Internal Revenue Service subsequently ruled that the partner companies are eligible for 100-percent production tax credits, we requested that SFC provide us a computer run changing the amount of production tax credits to 100 percent but keeping all other variables consistent with its April 1984 median-case analysis.

We also wanted to determine the sensitivity of Great Plains' finances to (a) price guarantee amounts less than the $790 million and (b) guaranteed gas prices less than those in the letter of intent. To accomplish objective (a), we requested that SFC, using its median-case scenario, conduct sensitivity analyses assuming $500 million, $650 million, and $770 million price guarantee amounts. We selected these amounts because they were within the range of assistance levels analyzed by SFC prior to signing the letter of intent with Great Plains. To accomplish objective (b), we requested that SFC change the gas prices guaranteed to (1) $7.50 per million Btu's for the first 3 years and $6.75 per million Btu's thereafter and (2) $7.50 per million Btu's throughout

---

[10]The Crude Oil Windfall Profit Tax Act of 1980 (Public Law 96-223) authorizes production tax credits; they apply to qualified fuels sold between January 1, 1980, and January 1, 2001. The credit is available if the price of domestic crude oil is between $23.50 per barrel and $29.50 per barrel (1979 dollars). The tax credit for natural gas is $3 per 5.8 million Btu's (1979 dollars) adjusted by the Gross National Product price deflator. The $3 credit is reduced by $.50 for every dollar the price of domestic crude oil is above $23.50 per barrel (after adjustments for inflation) and would be eliminated if the price of domestic crude oil increases to $29.50 (after adjustments for inflation). The amount of the credit is deducted from taxes owed.

the price guarantee period. We selected these amounts because the $7.50 per million Btu's is the price SFC guaranteed Great Plains after the first 3 years of the price guarantee period and the $6.75 per million Btu's is the price set out in Great Plains' gas pricing formula. All of the analyses for objectives (a) and (b) assume 100-percent production tax credits.

We asked SFC in October 1984 to perform the sensitivity analyses needed for objectives (a) and (b) above. Since SFC updates its computer assumptions quarterly, we wanted it to perform these analyses using the assumptions contained in its most recent median-case scenario. Instead SFC would provide the analyses we requested using only its April 1984 assumptions. SFC also provided us 14 analyses it had prepared in August 1984. These analyses used energy price projections and assistance structures different from those used in April 1984 and assumed 100-percent production tax credits. Some of these analyses are discussed on page 27 to show the sensitivity of Great Plains financial outlook to changing energy prices. According to SFC's Project Officer for Great Plains, these were all the analyses SFC had prepared between April 26 and December 5, 1984.

SFC uses both the incremental and all-in rates of return when evaluating and negotiating the terms of financial assistance for a project (see p. 6). We believe that Great Plains should not be measured using the incremental rate of return because that return excludes most construction costs and attributes all future profits to the latest incremental investment made. The all-in return, however, measures the project's overall financial performance and includes all costs and profits incurred from the start of construction in 1981.

SFC's year-by-year analyses of the project's finances use current year dollars that include the effects of inflation. In addition, certain financial measures, such as rates of return, are calculated both on a real and current dollar basis. Further, SFC calculates the discounted present value (DPV) by first adjusting current dollar amounts to real dollars and then discounting the amounts by 10 percent which, according to SFC, is the methodology prescribed by the Office of Management and Budget.

As requested by the Chairman's office, the discussion of internal rates of return and after-tax cash flows are shown in current (undiscounted) dollars. Since we normally analyze long-term impacts based on the time value of money, we also evaluated the project's expected financial returns using the net discounted present value technique. The net discounted present value of a future payment or receipt is the amount of money that, if invested today at a specified interest rate (called the discount rate), would grow to equal that future payment or receipt. In calculating the discounted present value, we used the 30-year Treasury bond rate for January 1981 published in the Federal Reserve Bulletin (12.14 percent) as the discount rate. We selected the 30-year Treasury bond rate because the plant has an expected 25-year operating life (1985-2009) and construction began in 1981,

for a total of 29 years. We discounted cash flows and profit sharing back to 1981 because that was when construction began.

Unless otherwise noted, all financial values are expressed in undiscounted current year dollars.

Since there is no industry comparable to Great Plains, we compared Great Plains' return on equity with returns for the chemical and allied products industries and the petroleum and coal products industries from the 1984 Statistical Abstract of the United States. We selected these industries because coal is the feedstock for the project and ammonia, sulfur, and carbon dioxide are by-products of Great Plains' process.

To assess DOE's options in the event Great Plains abandoned the project, we obtained an analysis DOE prepared in December 1984 for the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, discussed the results with DOE's Financial Analyst for Great Plains, and reviewed some of DOE's computer analyses supporting its study.

Since April 1984, SFC and Great Plains have been discussing final contract terms. SFC officials would not, however, elaborate on how the contract could differ from the terms set out in the letter of intent because release of this information could jeopardize the negotiations. According to SFC's Chairman, it will not be able to formulate its position on the project until all the material changes that have occurred subsequent to April 1984 have been identified and analyzed. Therefore, should the terms of the contract differ materially from the letter of intent, the analyses presented in chapter 3 could change.

As requested by the Chairman's office, we did not obtain written comments from DOE, SFC, or Great Plains on this report. We did, however, discuss the material presented with DOE's Program and Project Offices for the Great Plains project, SFC's Acting Vice President for Finance and Project Officer for Great Plains, and the Great Plains Management Committee Chairman. All offered clarifications to the report, which were included where appropriate.

Our review was conducted between August and December 1984 and was performed in accordance with generally accepted government auditing standards.

CHAPTER 2

CASH-FLOW PROJECTIONS SHOW DETERIORATION OF GREAT PLAINS' FINANCIAL OUTLOOK

Each Great Plains' cash-flow projection prepared since January 1982 has reflected the progressively downward trend in energy prices experienced in the United States since January 1982 when the loan guarantee agreement was signed. The downward trend in energy prices and its impact on the potential financial viability of the project resulted in Great Plains seeking additional assistance from SFC. Great Plains' May 1984 cash-flow projection reflects the impact of this assistance. In summary, SFC's assistance provides additional income to the project during its early years which could compensate for a reduction in energy prices.

As part of the loan guarantee agreement, DOE requires Great Plains to submit a variety of financial data, including a cash-flow projection showing future revenues, expenses, and similar information. Great Plains submitted cash-flow projections to DOE in January 1982, March and September 1983, and May 1984. The cash-flow projection prepared in January 1982 indicated a favorable financial outlook for the project and showed that the plant would be in a positive cash-flow position after 3 years of operations.

The cash-flow projections prepared since January 1982 showed significant changes in the project's financial viability, for example, losses in net income, less distribution of funds to the partners, and larger capital investment requirements by the partners through 1996--the last year shown in the January 1982 projection. In the May 1984 cash-flow projection, these changes were not as large as those shown in the March and September 1983 projections mainly because of SFC's proposed $790 million in price guarantee assistance. The main reason for the changes shown in the cash-flow projections was that the energy prices used to estimate the project's synthetic gas prices were lower than those used in January 1982. Previously, we found that Great Plains' ultimate financial success is extremely sensitive to changes in future energy prices.[1]

The following table--based on Great Plains' cash-flow projections--summarizes the changes in projected net income, funds distributed to the partners, capital investment requirements through 1996 (the last year covered by the January 1982 projection and used for comparative purposes with the other cash-flow projections), and the last year of each cash-flow projection that Great Plains has submitted.

---

[1]Economics of the Great Plains Coal Gasification Project (GAO/RCED-83-210, Aug. 24, 1983).

	Jan. 1982	Mar. 1983		Sept. 1983[a]		May 1984[b]	
	1981 Thru 1996[c]	1981 Thru 1996[d]	1997 Thru 2000[e]	1981 Thru 1996[d]	1997 Thru 2009[f]	1981 Thru 1996[d]	1997 Thru 2009[f]
	(million of dollars-undiscounted)						
Net income to partners	$2,200	$(382)	$1,700	$(1,200)	$9,800	$(240)	$1,600
Distribution of funds to partners	1,500	0[g]	942	0[g]	8,800	38	2,400
Capital investment requirements by partners after in-service date	86	841	0[h]	1,300	0[h]	811	0[h]

[a]Mid-case projection.

[b]100-percent production tax credit projection

[c]The January 1982 cash-flow projection stopped with 1996 because Great Plains estimated that the DOE-guaranteed debt would be fully repaid by that time.

[d]1996 was the last year of the January 1982 cash-flow projection and is shown for comparative purposes.

[e]The March 1983 cash-flow projection stopped with 2000 because Great Plains estimated that the DOE-guaranteed debt would be fully repaid by that time.

[f]The September 1983 and May 1984 cash-flow projections ended in 2009—the last year of the plant's expected operating life.

[g]No distributions of funds to the partners through 1996.

[h]No additional capital investments required.

MARCH 1983 CASH-FLOW PROJECTION

In March 1983 Great Plains submitted its first cash-flow projection to DOE since signing the loan guarantee agreement. The March 1983 projection covered the period 1981 through 2000 and included a detailed analysis of the project's financial performance based on future mid-case energy prices as forecasted in DOE's

preliminary National Energy Policy Plan IV (NEPP IV).[2] The analysis resulted from a computer-based financial model that included assumptions for capital requirements, operating efficiencies, synthetic natural gas prices, by-product revenues, coal prices, operation and maintenance costs, debt repayment expenses, partnership income, source and use of partnership funds, and cash flows.

The March 1983 cash-flow projection indicated major changes in the project's future financial viability as compared with the projection made when the loan guarantee agreement was signed. It indicated much lower net income, more years of losses, and substantially reduced distribution of funds to the partners. It also indicated that substantially more funds than had been anticipated would be needed to keep the project solvent. The forecast changes were due almost entirely to decreases in project revenues as a result of changed energy price forecasts. Increases in expenses were not significant.

In comparison to the January 1982 projection,[3] the March 1983 projection showed the following:

--The project would lose $382 million rather than realize net income of about $2.2 billion through 1996. However, by the year 2000, net income would total $1.3 billion.

--Distribution of funds to the partners would be zero rather than $1.5 billion through 1996. However, by the year 2000, distribution to the partners would total $942 million.

--Additional capital, totaling $841 million, would be needed for the first 8 years to keep the project solvent instead of $86 million for the first 3 years.

The March 1983 cash-flow projection provided only a limited analysis of the project's finances since it did not--nor was Great Plains required to--consider how the parent companies of the partners might benefit from tax consequences. The tax considerations omitted were substantial. For example, the March projection indicated that the partners could contribute $517 million in equity during the 1981-1984 construction period. It did not show that during the same period the partners could reduce their combined tax liability by $400 million and thus could recover over 70 percent of their contributed equity on an after-tax basis. In addition, Great Plains' March 1983 projection showed that $841 million in additional capital would be needed during the first 8 years of operations. During the same time period, we found that losses

[2]The Department of Energy Organization Act (Public Law 95-91) requires DOE to prepare analyses of future energy trends. These analyses are called National Energy Policy Plans. DOE released its final NEPP IV projections in October 1983. The trends are presented in high, mid, and low-case energy prices.

[3]The January 1982 cash-flow projection covered the period 1981 through 1996.

from Great Plains' operations could have reduced the parent companies' tax liability by $921 million.[4]

SEPTEMBER 1983 MID-CASE CASH-FLOW PROJECTION

DOE released revised preliminary NEPP IV energy price forecasts in June 1983. These forecasted prices, which were used in the September 1983 projection, were lower than those Great Plains had used in its March 1983 cash-flow projection. The following table compares, for four sample years, the March and September mid-case projected synthetic gas sales prices that we calculated using Great Plains' pricing formula.

Year	March 1983 projected sales prices[a]	September 1983 projected sales prices[a]
	----------per million Btu's----------	
1985	$ 6.61	$ 6.44
1990	8.58	7.23
1995	14.59	11.91
2000[b]	23.51	21.37

[a]Current year dollars.

[b]The March 1983 projection ended with the year 2000.

Great Plains in September 1983 submitted a revised cash-flow projection based on DOE's June low- and mid-case energy price forecasts. This projection covered the period 1981 through 2009. The September 1983 analysis indicated additional years of losses, much lower net income, and a need for the partners to provide substantially more funds to keep the project solvent. In contrast to the January 1982 projection, Great Plains' September projection showed, using DOE's June 1983 forecast mid-case energy prices, the following:

--The project would lose $1.2 billion rather than realize net income of $2.2 billion through 1996. By the year 2009, net income would total $8.6 billion.

--Distribution of funds to the partners would be zero rather than $1.5 billion through 1996. By the year 2009, distributions to the partners would total $8.8 billion.

--Additional capital, totaling $1.3 billion, would be needed over 10 years to keep the project solvent instead of $86 million over 3 years.

---

[4]This was discussed in detail in our report Status of the Great Plains Coal Gasification Project, GAO/RCED-83-212, Sept. 20, 1983, and our testimony before the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, Oct. 18, 1983.

Although the September 1983 projection indicated these changes, it also showed that income would rise substantially during the last 10 years of the project's estimated life (2000-2009) because of sharply higher forecast synthetic gas prices. In addition, the September projection--unlike the March 1983 projection--considered tax implications. For example, the September 1983 projection indicated that, should the forecast mid-case prices occur, the sponsors could experience a cumulative after-tax net loss of $718 million during the first 10 years of the project's expected operating life (1985-1994). However, the after-tax losses would eventually be offset by after-tax income of $4.7 billion during the last 10 years of the project's expected life--2000 to 2009.

As a result of the projected losses during the first 10 years of the project, Great Plains applied to SFC for price guarantee assistance in September 1983 (chapter 3 discusses this in detail). On April 26, 1984, Great Plains and SFC tentatively agreed to the financial terms of this assistance. On May 29, 1984, Great Plains submitted another cash-flow projection to DOE.

MAY 1984 CASH-FLOW PROJECTION

Great Plains' May 1984 cash-flow projection assesses the project's finances from 1981 through 2009 and differs in several respects from its previous projections. For example, Great Plains changed its method of calculating synthetic natural gas prices, included the proposed terms of SFC price guarantee assistance, and considered the impact of production tax credits.

In its March and September 1983 cash-flow reports, Great Plains used DOE's NEPP IV mid-case energy price estimates as the basis for calculating synthetic natural gas prices (the September projection also included a low-case analysis). However, in its May 1984 projection, Great Plains used a variety of assumptions in calculating the synthetic natural gas prices.

Great Plains, believing that DOE's NEPP IV mid-case prices were too high for the 1985 to 1989 period, developed its own energy price forecasts. According to ANG's Vice President for Finance, for the 1985 to 1989 period, Great Plains used 1984 actual oil prices from available publications (ANG's Vice President for Finance did not specify which publications were used) and the low-case oil prices from NEPP IV for 1989 and then calculated a straight-line increase for the years 1985 through 1988. The resulting prices were discussed with each of the partners separately (discussions of prices with all partners present are prohibited by anti-trust laws). ANG's Vice President for Finance said he then made adjustments based on the discussions with each of the partners. The prices Great Plains thus derived for the 1985-1989 period were lower than DOE's NEPP IV mid-case projections. For example, DOE's NEPP IV 1985 mid-case oil price projection was $25.90 per barrel (1982 dollars); Great Plains used $24.95. For 1988, DOE's mid-case price was $29.20 per barrel (1982 dollars);

Great Plains used $24.38 per barrel. In addition, during this time, Great Plains' prices were lower than SFC's median-case prices but higher than the mid-case prices published by Data Resources, Inc. (a recognized econometric firm).

For the period 1990-2000, Great Plains used NEPP IV low prices in calculating the synthetic gas prices. Although NEPP IV prices were available beyond the year 2000, Great Plains believed these prices were too high and instead assumed a 1.5 percent real growth rate for the gas prices used for the remainder of its analysis--2001 to 2009. For example, DOE's NEPP IV price in 2005 was $5.60 per million Btu's (1982 dollars), whereas Great Plains' price, based on the 1.5 percent real growth rate, was $4.90 per million Btu's. The expected increase in net income and distributions to the partners as shown in the table on page 11 would have been higher if Great Plains had used DOE's price projections. In addition, Great Plains prices were lower than SFC's median-case prices and lower than Data Resources, Inc.'s mid-case prices except between 1990 and 1994 when they exceeded Data Resources' mid-case prices.

On April 26, 1984, officials of Great Plains, the parent companies of the partners, and SFC's Chairman signed a letter of intent for up to $790 million in price guarantee assistance. Under the terms of the letter of intent, Great Plains would accelerate repayment of the DOE-guaranteed loan. During the first 3 years of the price guarantee period, the Great Plains partners would contribute $100 million in equity and all project-related after-tax cash flow (including that generated by price guarantee receipts) so that Great Plains could accelerate repayment of the DOE-guaranteed loan. After that, Great Plains would use 90 percent of project-related positive cumulative after-tax cash flow to accelerate repayment of the loan balance. In calculating the 90 percent of the positive cumulative after-tax cash flow for the May 1984 projection, Great Plains excluded the impact of interest savings realized from accelerating debt repayment. Great Plains assumed the savings would go to the parent companies.[5] Further, Great Plains calculated debt retirement on an annual rather than a quarterly basis as SFC requires. Therefore, according to DOE's Financial Analyst for Great Plains, the amounts shown in the cash-flow projection for debt retirement between 1988 and 1999 (the time during which Great Plains estimates the 90-percent calculation would be applicable) are understated.

In addition, Great Plains' previous cash-flow projections did not consider the impact of production tax credits on the project's profitability because Great Plains did not believe that the sponsors could meet the eligibility requirements to qualify for these

[5]According to DOE, Great Plains subsequently informed it that its projection had been changed to include the interest savings before calculating the 90 percent increases in after-tax cash flow. However, Great Plains did not provide DOE with a revised cash-flow projection showing this change.

credits. However, on February 29, 1984, Great Plains petitioned the Internal Revenue Service for a formal ruling on the project's eligibility to take at least some of these tax credits. Specifically, Great Plains asked whether the sale of the project's synthetic gas to subsidiaries of four of the partners constitutes a sale to an "unrelated person" as defined in subparagraph A and B of section 44D (a)(2) of the Internal Revenue Code.

In July 1984, the Internal Revenue Service ruled that Great Plains is entitled to production tax credits and could pass these credits on to the partner companies. Therefore, each partner could take into account in computing its taxable income its share of the credit. Great Plains, DOE, and SFC officials believe this ruling means that the partners are eligible for 100 percent of the production tax credits. Since Great Plains had not received the ruling prior to submitting its May 1984 cash-flow projection to DOE, Great Plains assessed the project's finances assuming no production tax credits and assuming 100-percent production tax credits. The discussion which follows is limited to the portion of the May 1984 cash-flow projection that assumed the partners would utilize 100 percent of the production tax credits available.

In contrast to the January 1982 projection, the May 1984 cash-flow projection showed the following:

--The project would lose $240 million rather than realize net income of $2.2 billion by 1996. However, by the year 2009, net income would total $1.4 billion.

--Distribution of funds to the partners would be $38 million through 1996 rather than $1.5 billion. By the year 2009 cumulative distributions to the partners would total $2.4 billion.

--Additional capital, totaling $811 million, would be needed over 11 years to meet general cash requirements instead of $86 million over 3 years.

The May 1984 projection showed these losses even though it indicated Great Plains would receive $790 million in price guarantee assistance between 1985 and 1989. It also showed that Great Plains would make profit sharing payments to SFC between the years 2000 to 2009 amounting to $1.2 billion.

As pointed out on page 15, one requirement of the tentative SFC price guarantee assistance is accelerated repayment of the DOE-guaranteed debt. The DOE loan guarantee agreement requires Great Plains to begin paying interest on the debt in July 1982 but defers loan principal payments until January 1988. The loan guarantee agreement requires semiannual payments of principal in approximately equal installments. The payment amounts are set by the Federal Financing Bank. SFC's letter of intent requires Great Plains to make additional quarterly payments on debt principal beginning in 1985. These payments may vary because they are

calculated based on project-related after-tax cash. According to SFC and DOE officials, paying the debt earlier alleviates the parent firms' book losses because of reduced interest expenses. By shifting the payment of the debt to the early years of the project when price guarantees are received, the May 1984 cash-flow projection indicated the following:

--Between 1985 and 1987, $594 million of the $811 million in additional capital that would be needed for the project would be used to repay debt principal compared to no principal payments under the loan guarantee agreement during that time.

--In 1986 and 1987, $272 million of funds from operations that would have otherwise been distributed to the parent companies would be used to make accelerated payments of the loan principal, compared to being retained by the companies under the loan guarantee agreement.

--Between 1985 and 1987 Great Plains would repay $866 million, or about 55 percent of the debt principal, compared to no payments under the loan guarantee agreement during that time.

--Seventy percent of the debt principal would be repaid by 1990, compared to 1998 under the loan guarantee agreement.

--The loan would be fully repaid by 1999, compared to 2003 under the loan guarantee agreement.

OBSERVATIONS

Great Plains' cash-flow projections show that the project's financial outlook is sensitive to anticipated future energy prices, which control the price of the project's synthetic gas. Each cash-flow projection used lower synthetic gas prices than its predecessor because the forecast energy prices were lower. The cash-flow projections showed deterioration in the project's financial outlook through 1996--significant decreases in net income, fewer funds distributed to the partners, and larger capital investment requirements--compared to those projected in January 1982 when the loan guarantee agreement was signed. However, the changes in the May 1984 projection were not as large as had been projected previously because of the effects of SFC's proposed $790 million in price guarantee assistance and production tax credits. Despite projected losses during the first 10 years of plant operations, all the cash-flow projections showed that the project's finances substantially improve after 1997 as a result of projected increases in synthetic gas prices.

CHAPTER 3

IMPACT OF SFC'S PROPOSED ASSISTANCE ON GREAT PLAINS' FINANCES

Based on SFC's April 1984 median-case analysis[1] supporting the terms of the letter of intent, we found a number of impacts on Great Plains and the government as a result of the SFC's proposed assistance. While Great Plains would receive the financial benefits of $790 million in price guarantee assistance, it would realize a lower internal rate of return with assistance (14 percent) than without assistance (19 percent).

In February 1985 SFC and Great Plains officials told us that a number of changes had occurred since April 1984. For example, in August 1984 SFC revised its energy price forecast downward. SFC's August 1984 median-case analysis showed that Great Plains would still realize a 14-percent internal rate of return because the decrease in energy prices would be offset by the increase in production tax credits--assuming the partners would fully use these credits. Great Plains told us that, in addition to decreased energy prices, they have experienced a decrease in the potential sales of one by-product (carbon dioxide) and increases in operating costs (higher chemical consumption and increased personnel needed for the plant).

While we recognize that conditions are ever changing, we were unable to obtain analyses showing the impacts of all these changes. Nevertheless, we did perform analyses to show how certain changes affect the project's financial viability. Since we were requested to determine the effects of SFC's proposed assistance on Great Plains' financial outlook, this chapter mainly focuses on analyses developed in support of the April 1984 letter of intent and variations to it.

The expected results of SFC's proposed assistance as shown in its April 1984 analysis are that:

--The DOE-guaranteed loan would be fully repaid by 1994 rather than 2004.

--The Great Plains partners, during the first 3 years of the price guarantee period, would contribute an additional $100 million in equity and all after-tax cash (that would otherwise be retained by the partners) so that Great Plains could accelerate repayment of the DOE-guaranteed loan.

--Great Plains would use 90 percent of project-related positive cumulative after-tax flow after 3 years to accelerate repayment of the balance of the DOE-guaranteed loan.

---

[1]SFC's analyses use different assumptions than those used by Great Plains in its May 1984 cash-flow report, which was discussed in chapter 2. As a result the numerical values presented in this chapter differ from those in chapter 2.

--Great Plains would pay SFC $3.4 billion between 1995 and 2009 as a result of the profit sharing provision in the letter of intent.

In addition, the likelihood of abandonment could be reduced as a result of the additional funds received from price guarantee receipts.

On the other hand, when the time value of money is considered, providing $790 million in price guarantee assistance to Great Plains would mean that the government would receive $87 million less in profit sharing receipts than it paid out in price guarantee assistance.

Further, the Energy Security Act requires SFC to consider tax credits in determining the appropriate amount of assistance. SFC negotiated the letter of intent assuming that the partner companies could be eligible for 77 percent of production tax credits. However, in July 1984, the Internal Revenue Service notified Great Plains that the partners are eligible for 100 percent of these credits. Although we do not know whether the partners could fully utilize 100 percent of these credits, SFC told us it will assess the project's financial outlook considering the impact of the additional production tax credits and other factors prior to finalizing an assistance contract.

We analyzed the impacts of price guarantee amounts lower than the $790 million in combination with 100-percent production tax credits. We found that $500 million in assistance when combined with 100 percent production tax credits would provide Great Plains at least $24 million more in cumulative after-tax cash flow through 2009 (discounted present value) and a 15-percent internal rate of return compared to 14 percent under the terms of the letter of intent. Further, full repayment of the DOE-guaranteed loan would be accelerated by 1 year. These results occur because the higher production tax credits more than offset the reductions in benefits resulting from lower assistance levels.

In addition, by maintaining $790 million in assistance but reducing the gas prices guaranteed in the letter of intent--$10 per million Btu's for the first 3 years and $7.50 per million Btu's thereafter--to $7.50 per million Btu's throughout the price guarantee period, we found that Great Plains' financial outlook would be as favorable as those which resulted from SFC's April 1984 negotiations. For example, Great Plains could realize about $6 million more in cumulative after-tax cash through 2009 (discounted present value) and the same internal rate of return compared to the assistance package outlined in the letter of intent. Further, full repayment of the DOE-guaranteed loan would occur 1 year sooner. These results occur because Great Plains would receive both $790 million in assistance and increased production tax credits. Although SFC would pay smaller amounts of assistance over a longer period of time, Great Plains would receive the added benefits of production tax credits during part of the price guarantee period.

While these analyses were valid at the time they were conducted, they are contingent upon energy prices and other assumptions remaining at the level SFC used in April 1984. Since April 1984, several changes have occurred, such as declining energy prices. Great Plains' ultimate financial success is extremely sensitive to future energy prices. While we recognize the importance of energy prices and their impacts on the project, the analyses presented in this chapter mainly focus on the effects of price guarantee assistance, using SFC's April 1984 median-case scenario, and variations to that scenario. These analyses are only illustrative and the outcomes could change as conditions on which key assumptions are based change.

GREAT PLAINS' REQUESTS FOR SFC ASSISTANCE

Great Plains' September 1983 cash-flow projection indicated that, while there would be large and prolonged after-tax losses and negative after-tax cash flows during the first 15 years of the project's operations, the project could be profitable to the partners over the long term (see pp. 13-14 for a discussion of the September cash-flow report). Although Great Plains recognized the project's potential long-term profitability, its partners were more concerned that the large after-tax losses--and the risk of even lower energy prices--would diminish their consolidated earnings, tend to weaken their credit rating, increase their cost of capital, and drain capital from their other businesses. According to the partners, they gave more weight to these factors than to the speculative profits the project might generate in the future. The partners believed that the near-term problems posed too great a risk especially since the long-term profitability could be realized only if the forecast rise in energy prices actually occurred.

In September 1983 Great Plains applied to SFC for additional assistance--in the form of price guarantees. On October 22, 1983, SFC's board of directors decided not to act because it determined that any assistance for the project should first come from legislative actions that would (1) allow the project partners to obtain production tax credits and (2) permit DOE to convert funds set aside for loan guarantees into funds to provide Great Plains the desired price guarantees.

However, at its December 1, 1983, meeting, SFC's board of directors decided to provide a means whereby Great Plains could apply to SFC for assistance. The board took this action, according to SFC's former General Counsel, because of changed circumstances surrounding the project. For example, the suggested legislative actions had not been initiated, and the project sponsors notified DOE in November 1983 that they were considering terminating their participation in the project as a result of the reductions in the project's financial prospects as shown in the

September 1983 cash-flow projection.[2] SFC's former General Counsel said that the board believed it would be irresponsible for SFC not to reexamine the project in light of these changed circumstances. The board determined that a solicitation[3] for project proposals would be the appropriate mechanism under which it could consider providing assistance to the Great Plains project.

On January 5, 1984, SFC issued a solicitation for coal or lignite gasification projects seeking financial assistance.[4] The only proposal received was from Great Plains. Following a period of negotiation, Great Plains and SFC signed a letter of intent on April 26, 1984, outlining the general terms and conditions of possible assistance. The major elements of the letter of intent follow:

--SFC would provide up to $790 million in price guarantees for up to 10 years after the date of initial synthetic gas production. The guaranteed payments would be the difference between the guaranteed price and the market price of the gas sold. The guaranteed prices were set at $10 per million Btu's for the first 3 years and $7.50 per million Btu's for the remaining 7 years and would be adjusted monthly for inflation.[5]

--During the first 3 years of the price guarantee period, Great Plains' partners would contribute an additional $100 million in equity and all project-related positive cumulative after-tax cash flow (including that generated from price guarantee receipts) to be used by Great Plains to accelerate repayment of the DOE-guaranteed loan. Thereafter, until the DOE-guaranteed loan is fully repaid, Great Plains would use 90 percent of the positive cumulative after-tax cash flow to accelerate repayment of the loan balance. After the debt is paid, Great Plains would share profits with SFC--70 percent of the positive cumulative after-tax cash flow over the remaining useful life of the

---

[2]DOE's loan guarantee agreement sets certain criteria whereby the partners could terminate their participation during construction and after the plant begins operations.

[3]By issuing solicitations for proposals for synthetic fuels projects, SFC invites private industry to seek financial assistance.

[4]This solicitation was directed toward projects capable of producing at least 10,000 barrels per day of crude oil equivalent by 1990.

[5]According to the Energy Information Administration's Annual Energy Outlook for 1983, the price residential customers paid for natural gas in 1983 was $5.80 per million Btu's, commercial users paid $5.42 per million Btu's, and industrial users, $4.18 per million Btu's.

project, to a maximum of $1.58 billion in March 1984 dollars.

In April 1984 SFC estimated that the $790 million in price guarantee assistance would be paid during the 6-year period--1985 through 1990, the DOE-guaranteed debt would be repaid in 1994, and the government could receive approximately $3.4 billion between 1995 and 2009--the last year of the project's expected operating life--in profit sharing receipts (p. 26 discusses profit sharing in greater detail).

Completion of negotiations for price guarantee assistance was expected by July 1, 1984. This did not occur because on April 27, 1984, one member of SFC's board of directors resigned, leaving it without the quorum needed to act on financial assistance awards. President Reagan made recess appointments to the board on November 28, 1984. SFC's board expects to act on Great Plains' financial assistance contract in the spring of 1985. The terms of the final contract could differ from those SFC negotiated in April 1984. However, SFC would not elaborate on how the terms could change since Great Plains and SFC are continuing their negotiations.

GREAT PLAINS' INTERNAL RATE OF RETURN WITH AND WITHOUT ASSISTANCE

SFC's analyses showed that the project's internal rate of return would be higher without SFC assistance than with it.[6] Without assistance the project could expect about a 19-percent internal rate of return; with assistance, about a 14-percent internal rate of return. According to SFC's former Vice President for Finance, the no assistance case shows a higher internal rate of return because the loan guarantee agreement provided for repayment of the DOE-guaranteed loan by 2004 and required no equity contributions by the partners after construction was complete. However, in providing assistance SFC would require Great Plains to contribute additional equity, accelerate repayment of the debt, and share profits with SFC. These factors contribute to the lower internal rate of return.

SFC's April 1984 analysis shows, during the time Great Plains receives price guarantees (1985-1990), that about $1.3 billion of the estimated $1.5 billion, or 87 percent, of the loan principal would be repaid. Without SFC assistance, about $302 million, or 20 percent, would be repaid. Further, accelerating debt repayment (a) reduces the number of years of after-tax book losses to the project from 7 years--1985 through 1991--to 1 year--1985 and (b) saves the project over $547 million in interest expense over the 7 years and $1.3 billion over the life of the project.

---

[6]Both analyses were based on SFC's April 1984 median-case energy prices and assumed 77 percent production tax credits. Although SFC provided us an analysis with assistance and 100-percent production tax credits, it did not provide a no assistance analysis with 100-percent production tax credits.

According to SFC's former Vice President for Finance, as long as the debt remains outstanding, Great Plains must get funds either from revenues generated by the project or from the parent companies to pay the debt. However, if energy prices fall below projections or the plant does not operate at the expected level, the project might not generate revenues sufficient to meet principal and interest payments, cover costs, and provide a profit to the partners. Further, if the project experiences operating losses, the parent companies would have to use equity reserves to make principal and interest payments to avoid a default by Great Plains on the loan. However, SFC's assistance provides additional income during the first 10 years of operations and helps alleviate the impact of losses.

In commenting on this report, the Great Plains Management Committee Chairman reiterated that the partners are mainly concerned with the project's financial outlook during the first 10 years the plant operates (1985-1994) rather than the speculative profits that might be generated after that time.

IMPACT OF CHANGING TAX BENEFITS ON PROPOSED ASSISTANCE

The Energy Security Act of 1980 (Public Law 96-294), which created SFC to provide financial assistance for synthetic fuels projects, requires SFC to limit price guarantee assistance to the minimum subsidy necessary to provide synthetic fuels investors an "adequate incentive in light of projected prices of competing fuels and the requirements for economic and financial viability of the synthetic fuel project." In addition, the act directs SFC to consider any specific tax credits directly associated with a synthetic fuel project in determining the need for and amount of financial assistance awards.

Since signing the letter of intent, the percentage of production tax credits available to the Great Plains partners has been clarified by the July 1984 Internal Revenue Service ruling. As a result of the potential change in production tax credits from 77 percent used by SFC in April 1984 (about $181 million) to 100 percent (about $263 million), we wanted to determine what effect the combination of (1) a lower price guarantee amount but higher production tax credits and (2) the same price guarantee amount, higher production tax credits, but lower guaranteed gas prices would have on the project's finances.

Impact of lower price guarantee amounts

We analyzed the impact of $500 million, $650 million, and $770 million in price guarantee assistance on the project's finances. We selected these amounts because they were within the range of assistance levels that SFC analyzed prior to signing the letter of intent with Great Plains. The following table shows Great Plains' cumulative after-tax cash flow and internal rate of return through 2009 for each of these assistance levels (assuming 100-percent production tax credits) compared to the terms SFC

negotiated in April 1984 (which assumed 77-percent production tax credits). Except for the production tax credits, all other assumptions (including energy prices) used in these analyses were consistent with the terms SFC negotiated in April 1984.[7]

		Cumulative after-tax cash flow				Profit sharing			
Price guarantee assistance	Years of price guarantees	Undiscounted dollars	DPV[a]	Internal rate of return	Years to pay back loan	Undiscounted receipts	DPV of receipts	DPV of price guarantee assistance	DPV of receipts less DPV of price guarantee assistance
(million)		(billion)	(million)	(percent)		(billion)	----------	(millions)	----------
$790[b]	6	$2.9	$122	14	10	$ 3.4	$310	($397)	($87)
$500[c]	3	3.5	145	15	9	3.4	274	(277)	(3)
$650[c]	5	3.1	147	15	8	3.3	323	(345)	(22)
$770[c]	6	3.1	162	15	8	3.5	332	(390)	(58)

[a]Discounted present value.

[b]SFC's letter of intent, 77-percent production tax credits.

[c]DOE's analysis, 100-percent production tax credits.

Using SFC's April 1984 analysis, reducing the total amount of price guarantee assistance but increasing production tax credits

--increases Great Plains' expected cumulative after-tax cash flow and internal rate of return,

--accelerates full repayment of the DOE-guaranteed loan by 1 or 2 years, and

--improves the government's return from profit sharing (discussed on p. 26).

These results are possible because the higher production tax credits more than offset the reductions in benefits resulting from lower assistance levels. However, the possibility of lowering the price guarantee amount is contingent upon energy price forecasts remaining at the level SFC used in April 1984.

Impact of changing the guaranteed gas prices

Another way to achieve results similar to those expected when the letter of intent was signed would be to maintain the $790 million in assistance but reduce the guaranteed gas prices set out in

[7]We do not know whether the partners could fully utilize 100-percent production tax credits. However, since Great Plains assumed 100 percent in one of its May 1984 cash-flow projections, we used the same assumption. In addition, other assumptions used in these analyses could change depending on when SFC and Great Plains complete their contract negotiations or if contract terms differ from those in the letter of intent.

the letter of intent. The letter of intent guarantees Great Plains $10 per million Btu's for the first 3 years of the price guarantee period and $7.50 per million Btu's thereafter (these amounts are adjusted monthly for inflation).

We analyzed the impact of guaranteed gas prices of (a) $7.50 per million Btu's for the first 3 years and $6.75 per million Btu's thereafter and (b) $7.50 per million Btu's throughout the price guarantee period (also adjusted for inflation). We selected these amounts because $7.50 per million Btu's is the price SFC guaranteed after the first 3 years of the price guarantee period and the $6.75 per million Btu's is the price set out in Great Plains gas pricing formula.

Our analyses of lower guaranteed gas prices combined with $790 million in assistance and 100 percent production tax credits are shown in the following table.

		Cumulative after-tax cash flow				Profit sharing			
Analysis	Years of price guarantees	Undiscounted dollars	DPV[a]	Internal rate of return	Years to pay back loan	Undiscounted receipts	DPV of receipts	DPV of price guarantee assistance	DPV of receipts less DPV of price guarantee assistance
		(billion)	(million)	(percent)		(billion)	---------- (millions) ----------		
$10/$7.50[b]	6	$2.9	$122	14.4	10	$ 3.4	$310	($397)	($87)
$7.50/$6.75[c]	9	2.9	112	14.3	10	3.3	297	(189)	108
$7.50[c]	8	2.9	128	14.6	9	3.4	321	(256)	65

[a]Discounted present value.

[b]SFC's letter of intent, $790 million in assistance, 77-percent production tax credits.

[c]GAO's analysis, $790 million in assistance, 100-percent production tax credits.

As can be seen from the table,

--price guarantees would be paid out over a 9-year and 8-year period respectively, compared to the 6 years projected by SFC,

--Great Plains' internal rate of return and cumulative after-tax flow would be comparable to that expected at the time the letter of intent was signed,

--the time to repay the DOE-guaranteed loan would be the same as or one year earlier than the terms set out in the letter of intent, and

--the government could realize a positive return from profit sharing receipts from Great Plains compared to a negative amount under the terms of the letter of intent (discussed on p. 26).

These results are possible because Great Plains would receive $790 million in assistance and increased production tax credits. Although SFC would pay smaller amounts of price guarantee assistance over a longer period of time, Great Plains would also receive production tax credits during part of the price guarantee period.

MOST PRICE GUARANTEE PAYMENTS RETURNED THROUGH PROFIT SHARING

After Great Plains repays the DOE-guaranteed debt, it would share profits with SFC--70 percent of project-related positive cumulative after-tax cash flow. Based on SFC's April 1984 analysis, profit sharing payments would be made for 15 years through the year 2009 and would equal approximately $3.4 billion (net receipts would be $2.6 billion--$3.4 billion minus $790 million in price guarantees).

Since the expected profit sharing receipts exceed the price guarantee payments, SFC's Chairman testified before the Subcommittee on Energy Development and Applications, House Committee on Science and Technology, on June 6, 1984, that Great Plains' profit sharing provision would actually "pay a profit back to the taxpayer."

However, money received today is worth more than money received in the future. The return to the government from profit sharing is better demonstrated when the time value of money is considered. For example, the $790 million in assistance would be expended during the first 6 years of operations--1985 through 1990. However, profit sharing receipts do not begin until 1995, and 74 percent--about $2.5 billion--are received between the years 2000 and 2009. As a result, the $790 million Great Plains would receive during the early years of the project is worth more than the $3.4 billion SFC could receive in profit sharing in the future. When the near-term cost of price guarantee payments is discounted and subtracted from the discounted profit sharing receipts in the distant future, the government would receive $87 million less than it paid out under the terms negotiated in the letter of intent. According to SFC, its calculations show that the net present value is $173 million less than it paid out.

Our computations do not consider the taxes paid by Great Plains' parent companies on the price guarantees received by the project or that profit sharing payments made to SFC are deductible from the parent companies' taxable income. Further, the Energy Security Act does not require profit sharing as a prerequisite to a project's receiving SFC assistance. Rather, the concept was added by SFC in the event future energy prices rise and as a means whereby the price guarantee assistance paid out could be offset.

ENERGY PRICES AFFECT GREAT PLAINS' FINANCIAL VIABILITY

As indicated earlier, Great Plains' ultimate financial success is extremely sensitive to future energy prices. Previously,

we found that an annually compounded 3 percent increase or decrease applied to Great Plains March 1983 synthetic gas prices could result in as much as a 27-percent internal rate of return or as little as nothing over the first 20 years the plant operates.[8] According to DOE, oil prices are a key factor in the formula that controls the future prices of Great Plains synthetic gas (see p. 3 for a description of this formula). Therefore, reductions in forecast oil prices and the resulting impact on the expected prices of Great Plains' synthetic gas could affect the financial viability of the project.

Further, analyses of Great Plains' finances extend to the year 2009. The application of these projections for 25 years into the future and the uncertainty of future energy prices increase the speculative nature of any financial analysis of this project. Should energy prices change from those SFC used in April 1984, both Great Plains and the government could be affected. For example, if energy prices fall significantly below those used by SFC in April 1984, Great Plains could exhaust the $790 million in assistance faster and could take longer to repay the loan. Thus, significant decreases, such as those shown in the table below, could severely impact the project's long-term profitability. If, on the other hand, energy prices rise, Great Plains might not need the full $790 million in assistance and might repay the loan faster.

In August 1984 SFC revised its median-case energy price forecast downward. As part of its ongoing negotiations, SFC analyzed the project using these revised prices assuming 100-percent production tax credits and other factors. It also analyzed the project using an energy price forecast lower than its median-case scenario assuming 100-percent production tax credits. The following table compares the impact of these changes with SFC's April 1984 median-case analysis (77-percent production tax credits) for the project's cumulative after-tax cash flow and internal rate of return through 2009.

SFC analysis	Cumulative After-Tax Cash: Current dollars	Cumulative After-Tax Cash: Discounted present value	Internal rate of return
	(billions)	(millions)	(percent)
April 1984	$2.9	$122	14.4
August 1984			
Median case	2.8	121	14.4
Low case	.9	(106)	7.8

A significant decrease in energy prices from those SFC used to negotiate the letter of intent would result in Great Plains'

[8](GAO/RCED-83-210, Aug. 24, 1983).

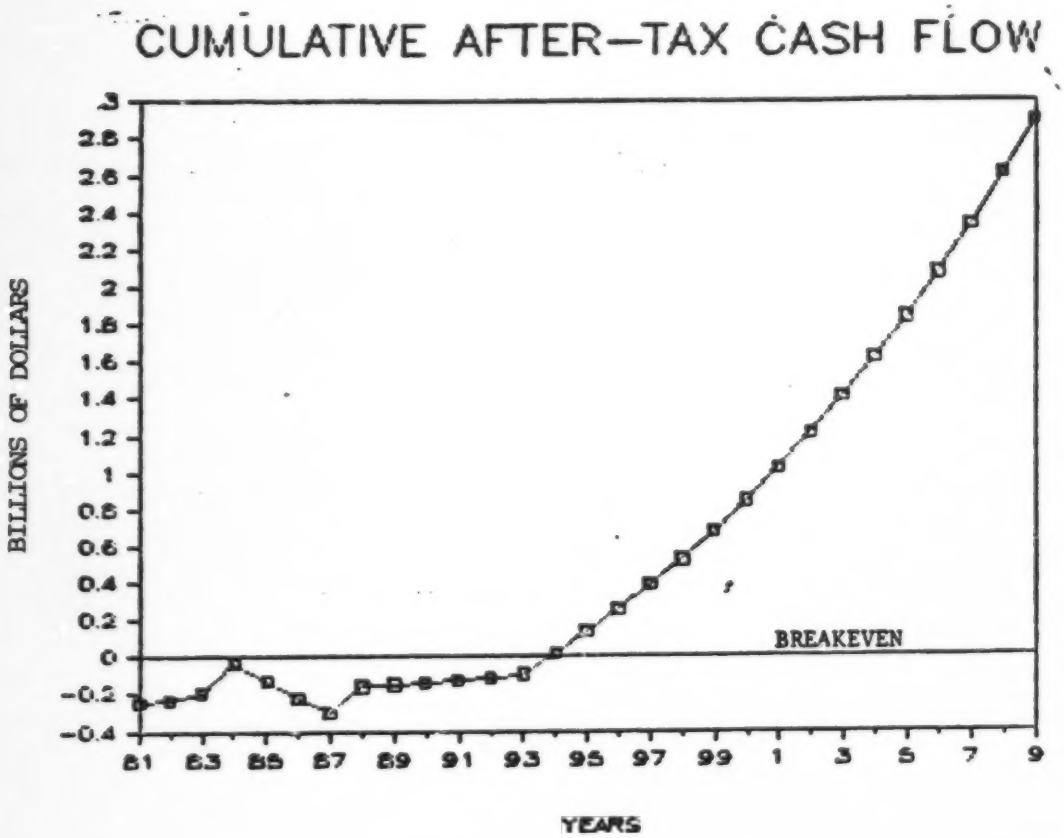
experiencing large after-tax losses (discounted present value) and a much lower internal rate of return.

OTHER ISSUES

The Chairman also asked that we provide information on Great Plains internal rate of return, returns on equity for industries comparable to Great Plains, internal rates of return used in SFC's analyses, and DOE's analysis of options in the event Great Plains abandons the project.

Great Plains' internal rate of return

An internal rate of return is the interest rate that equates the present value of future cash flows to the initial capital investment. The following graph, which is based on SFC's April 1984 analysis (77 percent production tax credits, undiscounted dollars) shows Great Plains' cumulative after-tax cash flow from the start of construction in 1981 through the end of the plant's expected operating life--2009.



As can be seen from the graph, Great Plains' cumulative after-tax cash flow through the year 2009 could be as much as $2.9 billion. However, Great Plains will not achieve a positive cumulative after-tax cash flow until 1995. During 1987, when Great Plains will reach the largest negative cumulative after-tax cash flow,

the maximum amount Great Plains will have invested is about $300 million. Through the year 2009, Great Plains could expect about a 14 percent internal rate of return as a result of these cash flows on the total project invesment.

Comparison of returns on equity

A return on equity is the percentage return that the partners could expect from their out-of-pocket investment or equity in the project. Including their investment under DOE's loan guarantee agreement and that expected under SFC's proposed price guarantee agreement, we calculated that the the Great Plains' partners could expect an 18-percent return on equity. We compared this return on equity with the returns for the chemical and allied products industry and the petroleum and coal products industry. The following table shows for five sample years the returns for these industries based on the 1984 Statistical Abstract of the United States. While there is no industry comparable to Great Plains, we selected these industries because coal is the feedstock and ammonia, sulfur, and carbon dioxide are by-products of the Great Plains plant.

Industry	1970	1975	1980	1981	1982
	(percent)				
Chemical and allied products	11.4	15.2	15.4	14.8	11.1
Petroleum and coal products	11.0	12.5	20.0	17.2	13.2

The returns on equity shown in this table are broad industry indexes and are historical. In contrast, Great Plains' return on equity is for one project and would be realized over a 25-year period ending in 2009. SFC officials pointed out that returns for other industries reflect both existing and prior investments and also investments made to satisfy safety or environmental requirements. SFC also stated that the returns for new, technologically risky investments, like Great Plains, are normally higher.

Internal rates of return used by SFC

SFC's model used to evaluate assistance for Great Plains produces both an incremental and all-in internal rate of return. SFC uses both of these rates when evaluating and negotiating the terms of financial assistance. The all-in return assesses the project's total financial performance. On the other hand, the incremental return assumes that most construction costs are sunk costs (costs incurred in the past which cannot be recouped), assesses a project from a certain point in time, and considers only the additional investment and income from that point in time.

In the case of Great Plains, the incremental return assessed the project's financial outlook from July 1984 through 2009 and computed the ratio of overall profits to the additional investment made--$790 million in SFC price guarantee assistance, $100 million in additional partner equity, about $442 million of construction costs, accelerated debt repayment, and profit sharing. SFC began with July 1984 since it had expected to finalize an assistance contract by that time. Since the incremental return excludes most construction costs and attributes all future profits to the latest incremental investment, it is significantly higher than the all-in return. In April 1984 SFC estimated that Great Plains' incremental return was 54.5 percent and the all-in return was 14.4 percent.

According to SFC's former Vice President for Finance, SFC uses both rates as one of numerous analytical tools to review a project. As such, their financial model routinely produces both rates. SFC officials, however, believe that to use the incremental return for Great Plains is misleading since it ignores approximately $1.4 billion in construction costs already invested in this project and believe it has little value when applied to projects that are almost complete. We agree. Also, SFC officials are concerned that the incremental return would be misunderstood and detrimental to the project. As discussed on page 8, we believe that Great Plains should not be measured using the incremental internal rate of return.

DOE's options in the event of abandonment

The loan guarantee agreement sets certain criteria whereby the Great Plains partners could terminate their participation in the project either during construction or after the plant begins operations. In November 1983 Great Plains' partners notified DOE that they were considering terminating their participation in the project under the terms of the loan guarantee agreement unless additional financial assistance was received. Great Plains has not withdrawn this notice.

In December 1984 DOE, in response to a request from the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, identified and analyzed options available to it in the event Great Plains abandoned the project in December 1984 or December 1989. The options DOE considered were whether it should sell the plant (either in 1986 and 1991) or operate it as a government-owned/contractor-operated (GOCO) facility. The sell options also assumed that DOE would operate the plant for at least 1 year as a GOCO to allow time to find a buyer and complete the procurement process. DOE analyzed these options using both the NEPP IV low- and mid-case energy prices. Under both energy price scenarios, DOE's analyses showed it would always be better for the government to operate the plant as a GOCO. The following table shows a comparison of some of the options DOE considered.

Analysis	Government Cash Flow			
	December 1984 abandonment		December 1989 abandonment	
	Undiscounted dollars	DPV[b]	Undiscounted dollars	DPV[b]
	----------(millions)----------			
DOE low-case				
Sell[a]	$ (540.5)	$(935.7)	$ 435.7	$ 31.6
GOCO	1,545.9	(543.8)	2,069.1	225.2
DOE mid-case				
Sell[a]	1,498.1	(158.5)	2,473.0	720.0
GOCO	4,800.9	459.9	5,163.5	1,093.6

[a]DOE conducted its analyses assessing both a 15- and 30-percent internal rate of return to the buyer. The numbers presented here are based on the results of its 15-percent analyses.

[b]DOE uses a 10-percent discount rate, which is the rate the Office of Management and Budget requires executive agencies to use.

OBSERVATIONS

On the basis of SFC's April 1984 median-case scenario, in exchange for the $790 million in price guarantee assistance offered by SFC, Great Plains would relinquish certain financial benefits. For example, Great Plains' internal rate of return would be lower (14 percent) with assistance than without assistance (19 percent). In addition, the equity and after-tax money that Great Plains would use to accelerate repayment of the DOE-guaranteed loan could have been used for other purposes. Finally, Great Plains could pay SFC an estimated $3.4 billion from profits that would otherwise be retained and/or used to finance other investment efforts. From the government's perspective, the DOE-guaranteed loan would be fully repaid 10 years earlier--1994 rather than 2004, Great Plains would provide SFC $3.4 billion between 1995 and 2009 because of the profit sharing provision in the letter of intent, and the likelihood of abandonment could be reduced.

Results similar to these could be achieved by awarding less than $790 million in assistance or by reducing the gas prices guaranteed in the letter of intent if energy prices and other assumptions remained the same as those SFC used in April 1984. This could be possible because the Great Plains partners are eligible for 100 percent of production tax credits rather than the 77 percent SFC estimated in April 1984 (we do not know whether all the partners could fully use these credits). When the increase in these credits was considered, our analyses showed that assistance as low as $500 million could provide Great Plains a 15-percent

internal rate of return compared to 14 percent under the terms of the letter of intent and could accelerate by 1 year full repayment of the DOE-guaranteed loan. In addition, reducing gas prices from those guaranteed in the letter of intent would provide Great Plains a 14-percent internal rate of return and SFC at least $65 million from profit sharing when the time value of money is considered.

All these analyses are based on certain assumptions and the energy price forecast SFC used in April 1984. Since April 1984, however, a number of changes have occurred. Although we do not know the impact of all the changes, SFC's August 1984 median-case analysis, which used lower energy prices than its April 1984 analysis, showed that Great Plains' cumulative after-tax cash would be $1 million less (discounted present value) than projected in April 1984. If energy prices decline further, Great Plains could be affected further. However, during the first 6 years of Great Plains' operations (1985-1990), the impact of downward energy prices would be minimized by SFC's assistance; and between 1990 and 2001, they would be partially offset by production tax credits, which are inversely related to energy prices.

(301674)